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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,404	05/06/2002	Takeshi Uchida	566.41259X00	3597

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EXAMINER	
UMEZ ERONINI, LYNETTE T	
ART UNIT	**PAPER NUMBER**
1765	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,404	UCHIDA ET AL.	
	Examiner	Art Unit	
	Lynette T. Umez-Eronini	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,3,20,21,33 and 35* is/are allowed.

6)☒ Claim(s) *1, 4-19, 22-32 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6/27/06 3-13-06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This communication is in response to Applicants' Remarks in Amendment filed 6/27/2006, which was persuasive in showing the Kondo et al. (US PG-PUB 2002/0016073) disqualify as prior art under 35 U.S.C. §102 and §103. Hence, a new Office Action is presented.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 4-9, 11-18, 22-28, 30-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaisaki et al. (US 6,194,317 B1).

As to claims 11, 4-9, 11-18, 22-28, 30-32, and 34, Kaisaki discloses a working liquid, which aids in wafer surface processing in combination with an abrasive article through a chemical mechanical polishing process (column 1, lines 44-51). The working liquid is typically water and an aqueous solution (column 12, lines 47-48) that includes:

an oxidizing agent (column 12, line 56-58, column 13, lines 10-48),

chemical etchant such as sulfuric acid (same as Applicants' metal-oxide-dissolving agent),

additives such as multidentate complexing carboxylic acids (same as Applicants' water-soluble polymer selected from the group of carboxylic acids), (column 14, lines 1-10) and protolytes such as amino acids (same as Applicants' protective film forming agent), (column 14, lines 57-62),

complexing agents such as ammonium salts (same as Applicants' protective film forming agent that is a nitrogen containing compound)

corrosion inhibitor such as benzotriazole (column 14, line 63 - column 15, line 2) and

inorganic particulates such as silica, zirconia (same as Applicants' metal oxide), (column 15, lines 22-26).

Hence, the aforementioned reads on,

A polishing medium for chemical mechanical polishing, comprising an oxidizing agent, a metal-oxide dissolving agent, a protective-film forming agent, a water-soluble polymer, excluding poly(oxoethylene) lauryl ether, polyvinyl alcohol, gelatin and carboxymethylcellulose, and water, **in claims 1, 27 and 34**;

wherein said oxidizing agent is at least one of hydrogen peroxide, nitric acid, and hypochlorous acid, **in claim 7**;

wherein said metal-oxide dissolving agent is at least one of an organic acid, **in claim 8;**

wherein said protective-film forming agent is a nitrogen-containing compound, **in claims 9 and 30-32**;

a polishing method comprising polishing a polishing object film of a metal with the polishing medium for chemical mechanical polishing according to claim 1, **in claim 11**;

wherein said polishing object film comprises at least one of copper, a copper alloy, a copper oxide and a copper alloy oxide, **in claim 12**; and

wherein said water-soluble polymer is selected from the group consisting of polysaccharides, polycarboxylic acids and esters and salts thereof, and vinyl polymers excluding polyvinyl alcohol, **in claims 18 and 28**.

It is noted Kaisaki is silent concerning Applicants' specifically claimed combination of an oxidizing agent, a protective-film-forming agent, and a water-soluble polymer, and water, **in claim 27**.

However, Kaisaki illustrates a working liquid comprising a mixture of an oxidizing agent, a protective-film-forming agent, and a water-soluble polymer, and water and having the same components as Applicants' polishing medium is known. Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Kaisaki's working liquid for the purpose of aiding in processing (a

wafer surface) in combination with an abrasive article through a chemical mechanical polishing process (column 12, lines 49-51).

Since Kaisaki teaches examples of compounds that comprises the same chemicals as Applicant's polishing medium, then using Kaisaki's polishing compounds in the same manner as the claimed invention would result wherein the polishing medium has a coefficient of kinetic friction of 0.25 or more, **in claims 4 and 13**, 0.35 or more, **in claim 22**, and 0.45 or more, **in claim 23**; an Ubbelode's viscosity of 0.95 mPa's (0.95 cP) or more and 1.5 mPa's (1.5 cP) or less, **in claims 5, 14, and 16,** of 0.96 mPa's to 1.3 mPa's, **in claim 24**, and of 0.97 to 1.0 mPa's, **in claim 25**; and a point-of-inflection pressure of 5 kPa (50 gf/cm^2) or more, **in claims 6, 15, and 17** and of 10 kPa (50 gf/cm^2) or more, **in claim 26**.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaisaka (US '317 B1) as applied to claim 27 above, and further in view of Sasaki et al. (US 5,770,095).

Kaisaki differs in failing to teach wherein said protective-film-forming agent is at least one of a mercaptan, glucose and cellulose.

Sasaki discloses a cmp composition comprising a chemical agent at is capable of forming a chelate compound or a complex with the film material that includes glucose (column 8, lines 20-29) and which is responsible for forming a protection film on the surface of the substrate to be polished by reacting with the material containing a metal as a main component (column 2, lines 7-16).

Sasaki illustrates a polishing composition comprising glucose, an example of a protecting film is known. Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kaisaki by using a protective-film (forming) agent as taught by Sasaki for the purpose of providing a polishing agent capable of forming a highly reliable conductive film at a high polishing rate while suppressing the occurrence of dishing (column 1, lines 58-63).

5. Claims 19 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaisaki (US '371 B1) as applied to claim 27 above, and further in view of Okajima et al. (US 4,956,015).

Kaisaki differs in failing to teach wherein said water-soluble polymer is selected from the group consisting of peptic acid, agar, polymalic acid, polymethacrylic acid, polyacrylic acid, polyacrylamide, and polyvinyl pyrrolidone, and esters and ammonium salts thereof, **in claim 19 and 29**.

Okajima teaches a polishing composition that comprises additives such as polyacrylic acid (column 4, lines63-68), which serves to increase the viscosity (column 5, lines 5-8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kaisaki's composition by employing an additive such as polacrylic acid as taught by Okajima for the purpose of increasing the viscosity (Okajima, column 5, lines 5-7).

Allowable Subject Matter

6. Claims 2, 3, 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

As to claim 2, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium wherein said water-soluble polymer has a weight-average molecular weight of 500 or more, along with the rest of the limitations of the claim and the intervening claims;

As to claim 3, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium wherein two or more water-soluble polymers each has a different weight-average molecular weight of 500 or more, along with the rest of the limitations of the claim and the intervening claims;

As to claim 20, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium wherein said water-soluble polymer has a weight-average molecular weight of 1500 or more, along with the rest of the limitations of the claim and the intervening claims; and

As to claim 21, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium wherein said water-soluble polymer has a weight-average molecular weight of 5,000 or more, along with the rest of the limitations of the claim and the intervening claims.

8. Claims 33 and 35 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

As to claim 33, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium for chemical-mechanical polishing, comprising an oxidizing agent, a protective-film-forming agent, a water-soluble polymer and water, wherein the water-soluble polymer is at least one selected from the group consisting of alginic acid, pectic acid, agar, curdian and pullulan; and

As to claim 35, the prior art of record taken alone or in combination fails to suggest, teach, or render obvious a polishing medium for chemical-mechanical polishing, comprising an oxidizing agent, a protective-film-forming agent, a water-soluble polymer and water, wherein the water-soluble polymer is at least one selected from the group consisting of polyvinyl pyrrolidone and polyacrolein.

Response to Arguments

10. Applicant's arguments with respect to claims 1-35 have been considered but are moot in view of the new ground(s) of rejection because the amended feature in base claim 27, and (Currently amended) claim 18, 19, 28, and 29 to exclude poly(oxoethylene) lauryl ether, polyvinyl alcohol, gelatin and carboxymethylcellulose from a polishing medium, was not taught by the former prior art of record.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 1765

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August 16, 2006

NADINE NORTON
SUPERVISORY PATENT EXAMINER
ART UNIT 1765